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<b>(54) Title:</b> DISPLAY PANEL AND METHOD OF MAKING THE SAME		
<b>(57) Abstract</b>		
<p>A display system (10) is shown which comprises, in combination, a display panel (12) and a modular multi-layer three dimensional figure (14) which can be readily disassembled and re-assembled in different forms. The display panel (12) has a structural member (20) with a first (32) and second (36) outer covering member, at least one of which is a hook or loop material, and which outer coverings (32, 36) are joined at their lateral edges (26, 28) in a narrow, unobtrusive seam (42). The figure (14) is comprised of a plurality of first flexible elements (16), flat in relaxed state, and having hook or loop fabric on at least one facial surface (48), and a plurality of second flexible elements (18), also flat in relaxed state, with hook or loop material on both facial surfaces (48, 50) which are releasably secured to the first flexible elements (16). A method of making the panel and a finger or hand puppet (60) constructed from the flexible elements (16, 18) are also shown.</p> <div style="text-align: center;"> </div>		

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## TITLE

## DISPLAY PANEL AND METHOD OF MAKING THE SAME

## BACKGROUND OF THE INVENTION

Display systems for use in instructional situations, such as class-rooms,  
5 convention booths, and the like, have long been known. The systems typically involve  
some type of display panel, capable of standing alone or being arranged in a group, or  
being affixed to a wall, alone or in an array. Informational materials, in the form of  
letters, numbers, pictorial images, or other shapes are often affixed to such panels, and  
may be affixed by various means, including magnetic attachment media, open staples  
10 or tacks, adhesives, or the like.

Such systems have often been employed in settings where children play,  
but allowing the children themselves to play with the display pieces has been limited  
for a number of reasons, including the hazards associated with staples and tacks, or  
chemical adhesives or the like, or the costs of magnetic attachment media.

15 In recent years, another attachment means has become popular which  
employs hook or loop fabric, commonly known and commercially available under the  
trademark VELCRO® or VELTEX® brand loop laminates, and several references  
show display systems employing such hook or loop fabric connectors. For the most  
part, however, the display panels which employ such hook or loop fabric have been  
20 limited because of the necessary weight of the supporting substrate and the complex  
construction. Conventional hook or loop display panels have generally been of two

construction types. In the first type, a groove is cut into the lateral edge of the structural material, and the lateral edge of the hook or loop fabric, or both lateral edges if the panel is to be two-sided, are tucked into the groove and adhesively bonded. The second type of construction is to wrap and adhesively bond a lateral edge of a first hook or loop fabric around a lateral edge of a first support structure, wrap and adhesively bond a lateral edge of a second hook or loop fabric around a lateral edge of a second support structure, then bond together the two support structures back-to-back with the fabric facing outwardly. Such construction methods mandate a display panel of significant weight, thickness and, most importantly, expense.

At the same time, children have been provided with numerous three-dimensional toys permitting the attachment of colors and shapes to a stuffed doll or three-dimensional stuffed object with hook or loop fabric. However, such toys limit the child's imagination to creating different figures around a base stuffed doll or three-dimensional object. Other known three-dimensional-figure toys include a set of blocks covered with hook or loop fabric which can be arranged in different patterns to create different toy figures, such as trains, cars and people. However, the set of blocks covered with hook-and-loop material limits the child's imagination to creating figures with static elements. There is a need in the toy/education field for a toy which will allow a child to make three-dimensional figures which permit the maximum use of the child's imagination. The present invention meets this need by providing a plurality of flexible elements which are constructed of hook-and-loop material which can be releasably attached to each other to form different figures. Such figures can be

releasably attached to display panels which are constructed of hook-and-loop material, such as the display panels known in the art, or the display panels of the present invention.

### BRIEF SUMMARY OF THE INVENTION

5 Briefly stated, the present invention discloses a display system which comprises, in combination, a display panel and a modular multi-layer three dimensional figure which can be readily disassembled and re-assembled in a wide variety of different forms. The display panel is suitable for releasably receiving modular design elements, and comprises a structural member having a first surface defined by a lateral  
10 edge, a second opposite surface defined by a lateral edge, and a side face joining said lateral edges of said first and second surfaces. The display panel is comprised of a first outer covering of a hook or loop fabric, with this first outer covering being in facing engagement with the first surface, and this first outer covering has a lateral edge positioned beyond the lateral edge of the first surface of the structural member. The  
15 display panel also has a second outer covering in facing engagement with the second surface, with the second outer covering having a lateral edge positioned beyond said lateral edge of the second surface. The lateral edges of the first outer covering and the second outer covering are joined to each other at the side face of the structural member in a narrow, unobtrusive seam.

20 A further aspect of the present invention is a method for assembling a display panel suitable for releasably receiving modular design elements. The method

comprises the steps of positioning a first outer covering, comprising a hook or loop fabric, in facing engagement with a first surface of a structural member with a lateral edge of the first outer covering positioned beyond a lateral edge of the first surface of the structural member. The method further comprises the step of positioning a second  
5 outer covering in facing engagement with a second surface of the structural member with a lateral edge of the second outer covering being positioned beyond a lateral edge of the second surface of the structural member. The lateral edges of the first outer covering and the second outer covering are then joined to each other at a side face of the structural member to form a narrow, unobtrusive seam.

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#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

The foregoing summary, as well as the following detailed description of the preferred embodiments of the invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention,  
15 there is shown in the drawings the embodiments which are presently preferred, it being understood, however, that the invention is not limited to the specific methods and instrumentalities disclosed. In the drawings:

**Fig. 1** is a front elevational view of a display panel in accordance with a preferred embodiment of the present invention with a modular, multi-layer figure  
20 assembled of first and second flexible elements releasably attached thereto:

**Fig. 2** is a cross-sectional view of a portion of the display panel shown in **Fig. 1**, taken along line 2-2;

**Fig. 3** is an enlarged elevational view of a facial surface of a second flexible element, showing detail of the hook-type fabric;

**Fig. 4** is a cross-sectional view of two first flexible elements constructed of loop-type fabric releasably assembled together with an intermediate second flexible element having hook-type fabric on both facial surfaces;

**Fig. 5** is an elevational view of a facial surface of a first flexible element, showing detail of the loop-type fabric;

**Fig. 6** is a cross-sectional view of a portion of the first flexible element of **Fig. 5**, taken along line 6-6;

**Fig. 7** is a cross-sectional view of a third flexible element provided with loop-type fabric on a first facial surface and hook-type fabric on a second facial surface;

**Fig. 8** is an elevational view of a finger puppet constructed from a first flexible element, with a user's finger in phantom;

**Fig. 9** is a cross-sectional view of the finger puppet of **Fig. 8**, taken along line 9-9;

**Fig. 10** is a perspective view of the display panel of the present invention with another modular, multi-layer figure assembled of first and second flexible elements releasably attached thereto; and

**Fig. 11** is a bottom perspective view of a freestanding three-dimensional figure constructed from the first flexible element of **Fig. 8**, with the addition of other second flexible elements.

## DETAILED DESCRIPTION OF THE INVENTION

Certain terminology is used in the following description for convenience only and is not limiting. The words "right," "left," "lower," and "upper" designate directions in the drawings to which reference is made. The terminology includes the words above specifically mentioned, derivatives thereof and words of similar import.

The display system of the present invention consists of an interactive system of modular components which allow adults and children to create an unlimited variety of two or three dimensional, pictorial images, patterns and designs which can be displayed independently or on display panels. The panels are constructed of a lightweight, rigid material such as the corrugated plastic material Coroplast, and are covered front-to-back with a hook or loop material. These panels can be arranged in a variety of manners, such as by mounting vertically on a wall or easel, used horizontally on a floor or table, or attached to similar panels to create a free-standing display unit, such as a pup-tent. The panels can be attached to a wall by using hook or loop fabric tape or coins, which may be adhesively mounted or stapled to a wall. The panel is then pressed into place with opposing hook or loop fabric engaging the hook or loop fabric pieces mounted on the wall. A plurality of display panels can be placed together to create a large interactive wall area, giving the panels application in trade show and display industries, as well as for education and children's play.

Further, the modular design permits independent use, and the panels can function as an element of the constructed figure as well. The modular nature of the system allows creative figures to be made on the panels, or independent of the panels.



as free-standing soft toys, finger puppets, costumes, hats and sculptural artistic creations. As used herein, the term "figure" is not limited to constructing impressions of organic beings, such as people, horses, cats and dogs, but includes impressions of inorganic items of a variety of different sizes and colors, which can be organized in a variety of different ways to create individual artistic impressions, such as a rocket, tool belt, wrist watch, and the like, or multiple artistic impressions such as scenes or murals.

Referring to the drawings, wherein like numerals indicate like elements throughout, there is shown in **Fig. 1** a display system, shown generally as **10**, comprising a display panel **12** in combination with a modular, multi-layer figure **14** assembled of a combination of first flexible elements **16** and second flexible elements **18** releasably attached thereto. **Fig. 2** is a cross-sectional view of a portion of the display panel **12** shown in **Fig. 1**, taken along line 2-2. In the greater detail of this view, the display panel **12** comprises a structural member **20** having a first surface **22** defined by a lateral edge **24**, a second opposite surface **26** defined by a lateral edge **28**, and a side face **30** joining the lateral edge **24** of the first surface **22** and the lateral edge **28** of the second surface **26**. The structural member **20** is preferably made of a rigid, lightweight material and, more preferably, is made of a corrugated polymeric material, such as that commercially available under the trade name Coroplast, or fire rated foam board. Preferably, the structural member **20** has a thickness in the range of about three millimeters (3mm.) to about ten millimeters (10mm.). Corrugated polymeric boards are well understood by those of ordinary skill in the art and, therefore, further description thereof is omitted for convenience and brevity only and is not limiting.

The display panel 12 is further comprised of a first outer covering 32 comprising a hook or loop fabric. As used herein the term "fabric" is broadly defined to include woven and nonwoven substrates of any semi-flexible material, including polymers and other materials used to construct hook material. The first outer covering 32 is in facing engagement with the first surface 22 of the structural member 20, and has a lateral edge 34 positioned beyond the lateral edge 24 of the first surface 22 of the structural member 20. In addition, the display panel 12 is provided with a second outer covering 36 in facing engagement with the second surface 26 of the structural member 20. The second outer covering 36 has a lateral edge 38 positioned beyond the lateral edge 28 of the second surface 26 of the structural member 20. The lateral edge 34 of the first outer covering 32 and the lateral edge 38 of the second outer covering 36 are joined to each other at a point 40 proximate to the side face 30 of the structural member 20 in a narrow, unobtrusive seam 42. In the preferred embodiment, the first outer covering 32 and second outer covering 36 are bonded to the first surface 22 and second surface 26 of the structural member 20, respectively, in a manner will understood by those of ordinary skill in the art. However, it is understood by those of ordinary skill in the art from this disclosure that the first outer covering 32 and the second outer covering 36 could be bonded only at seam 42 and not along the first and second surfaces 22, 26, without departing from the spirit and scope of the invention.

The seam construction allows adjacent panels to abut closely against one another while providing an uninterrupted surface between panels because the end seals are minimized. It has been found useful to create such a narrow, substantially

unobtrusive seam 42 by joining the lateral edge 34 of the first outer covering 32 and the lateral edge 38 of the second outer covering 36 and heat sealing the edges 34, 38 together, such as with a heated platen die. Satisfactory results can be obtained in other ways, such as by welding the lateral edge 34 of the first outer covering 32 and the lateral edge 38 of the second outer covering 36 with ultrasonic sound or radio frequency energy. While it is necessary that at least one surface of the display panel 12 be at least partially provided with hook or loop fabric, and may be provided with portions of both types, it is useful to provide in entirety both sides of the display panel 12 with such material. Thus, where coverage of one side would be adequate to provide a display panel 12 for use on a wall or in an array of such panels on a wall, provision of hook or loop fabric on both sides would allow the display panel 12 to be useful in free-standing display functions.

Further, in the present embodiment, a layer of padding 52 is provided between the first outer covering 32 of hook or loop fabric, and the first surface 22 of the support member 20. Similarly, in the present embodiment, a second layer of padding 54 is provided between the second outer covering 36 and the second surface 26 of the support member 20, particularly if the second outer covering 36 is also comprised of hook or loop fabric. The padding 52 between the first outer covering 32 and the first surface 22 of the support member 20, and the padding 54 between the second outer covering 36 and the second surface 26 of the support member 20 may advantageously be comprised of a polymeric foam, or any other suitable soft, resilient

material which is formed as part of the hook or loop fabric and can be heat sealed or ultrasonically bonded.

It is envisioned that the display panel 12 of the display system 10 of the present embodiment may be constructed in the following manner. First, a first outer  
5 covering 32 comprising a hook or loop fabric is positioned in facing engagement with a first surface 22 of a structural member 20, with a lateral edge 34 of the first outer covering 32 being positioned beyond a lateral edge 24 of the first surface 22 of the structural member 20. Then, a second outer covering 36 is positioned in facing  
10 engagement with a second surface 26 of the structural member 20, with a lateral edge 38 of the second outer covering 36 being positioned beyond a lateral edge 28 of the second surface 26 of the structural member 20. The first and second outer coverings 32, 36 may be secured to the structural member using conventional techniques well understood by those of ordinary skill in the art, such as by using an adhesive or contact  
15 cement (not shown). Finally, the lateral edge 34 of the first outer covering 32 and the lateral edge 38 of the second outer covering 36 are joined to each other at a point 40 proximate to the side face 30 of the structural member 20 to form a narrow, unobtrusive seam 42. Again, the creation of the seam 42 may be accomplished by heating the  
20 lateral edge 34 of the first outer covering 32 and the lateral edge 38 of the second outer covering 36, such as with a heated platen die, or with ultrasonic sound or radio frequency energy, or any other suitable manner.

The display panel 12 of the present invention represents an improvement over the prior art in the manner in which the lateral edge 34 of the first

outer covering 32 and the lateral edge 38 of the second outer covering 36 are joined together in a narrow, unobtrusive seam 42. This type of junction allows a much thinner substrate to be employed. In the prior art, it was taught that the lateral edges of the covering fabric should be wrapped around and tucked into a groove or channel cut in the supporting substrate, requiring a thicker and stronger substrate to support the groove. One of the advantages of the present invention is that a thinner support member 20 may be used in the construction of the display panel 12. Thus, the display panel 12 of the present invention may have a structural member 20 with a thickness in a range of about 3 millimeters to about 10 millimeters, and may advantageously be constructed of corrugated plastic. One skilled in the art would recognize from this disclosure that the present invention is not limited to constructing the structural member 20 of any particular structural material. In this regard, it is believed that many natural or artificial materials, such as mineral fiber board, masonite, press-wood, foam core board, or various multi-layer constructions would prove suitable.

The display system of the present invention, as shown in Fig. 1, further includes a modular multi-layer, three dimensional figure 14, which can be readily disassembled and re-assembled in various different forms using some or all of the design elements, or adding others. This modular figure 14 itself is comprised of a plurality of first flexible elements 16 and a plurality of second flexible elements 18.

Fig. 5 shows a first flexible element 16 which may be assembled with similar elements to form a figure. Fig. 6 shows a cross-sectional view of a portion of the first flexible element of Fig. 5, taken along line 6-6. Each of the first elements 16,

such as the one shown in **Figs. 5** and **6**, comprise a substantially flat, planar shape in a relaxed state. Further, each such first flexible element **16** has a first facial surface, shown as **44** in **Fig. 6**, and second facial surface, shown as **46** in **Fig. 6**, with at least one of these facial surfaces being constructed of a hook or loop fabric. In the present  
5 embodiment it is preferred that the first and second facial surfaces **44**, **46** be constructed of loop material. However, it is understood by those of ordinary skill in the art from this disclosure that the present invention is not limited to constructing the first flexible element **16** of loop material on both sides. An alternative construction might have (1) loop material on one side with hook material on the other side or (2) loop  
10 material on one side with neither hook or loop material on the other side (not shown), without departing from the spirit and scope of the invention. Further, a suitable first flexible element **16** may be constructed of only a single ply of hook or loop fabric, as shown in **Fig. 4**.

**Fig. 3** is a greatly enlarged view of a first facial surface **48** of a second  
15 flexible element **18**, with detail of the hook-type fabric on the first facial surface **48** being shown. **Fig. 4** is a cross-sectional view of two first flexible elements **16** constructed of loop-type fabric releasably assembled together with an intermediate second flexible element **18** having hook-type fabric on both the first facial surface **48** and a second facial surface **50**. Each of the second elements **18**, such as the one shown  
20 in **Figs. 3** and **4**, comprise a substantially flat, planar shape in a relaxed state. While it is preferred that the second flexible elements **18** be constructed of hook-type fabric on both the first and second facial surfaces **48**, **50**, it is understood by those of ordinary

skill in the art from this disclosure that one or both facial surfaces **48, 50** could be constructed of loop-type fabric. In this manner, the plurality of first elements **16** and second elements **18** may be releasably attached to each other by hook or loop fabric in multilayer arrangements.

5                   As shown in **Fig. 1**, at least a portion of said plurality of first and second elements **16, 18** are releasably attached to each other by said hook or loop fabric in multilayers and in a first pattern to form a first figure **14**. The plurality of first and second elements **16, 18** which form the first figure **14** are separable from each other. At least a portion of the first and second elements which formed the first figure **14** are  
10 again releasably attached to each other by the hook or loop fabric in multilayers and in a second pattern either alone or in combination with other of the first and second elements **16, 18** which were not used to form the first figure **14** to form at least a portion of a second figure **94**, as shown in **Fig. 10**. Therefore, a wide variety of multi-layer, three dimensional figures may be assembled by rearranging the first and second  
15 elements **16, 18** and employing the flexibility of the first and second elements **16, 18** to create multi-layer, three dimensional figures, as described in more detail below. Stated another way, such first elements **16** and second elements **18** may be assembled when relaxed or unrelaxed in a first pattern to form a first figure **14**, with the plurality of first elements **16** and the plurality of second elements **18** being separable from each other.  
20 The same elements, or some of them, may be again releasably attached to each other and other similar elements by said hook or loop fabric in multilayers and in a second pattern to form a second figure **94**, as shown in **Fig. 10**.

Fig. 10 is a perspective view of the display panel 12 of the present invention with another modular, multi-layer figure 94 assembled of some of the same first flexible elements 16 and second flexible elements 18 along with similar elements, all releasably attached relaxed and unrelaxed thereto. In this manner a wide variety of multi-layer, three dimensional figures may be assembled by rearranging the first elements 16 and second elements 18 and employing the flexibility of the first elements 16 and the second elements 18 to create the multi-layer, three dimensional figures. In Fig. 10, a first flexible element 16 is shown formed into a three-dimensional form 56, while a second flexible element 18 is twisted into a three-dimensional form 58.

In one preferred embodiment, satisfactory results have heretofore been obtained with the use of first flexible elements 16 provided with loop-type fabric on both first facial surfaces 44 and second facial surfaces 46, as shown in Fig. 6.

Likewise, satisfactory results have heretofore been obtained with the use of second flexible elements 18 provided with hook-type fabric on both first facial surfaces 48 and second facial surfaces 50, as shown in Fig. 4. As mentioned above, the present invention is not limited to such constructions, and first flexible elements 16 with hook-type fabric on one or both surfaces as well as second flexible elements 18 with loop-type fabric on one or both facial surfaces could well be employed in the practice of the present invention as well. In addition, Fig. 7 is a cross-sectional view of a third

flexible element 45 provided with loop-type fabric on a first facial surface 47 and hook-type fabric on its second facial surface 49, a construction which is also within the scope of the present invention. Furthermore, the present invention is not limited to



constructing of any of the first, second or third elements 16, 18, 45 of any particular shape. For instance, the first, second or third elements 16, 18, 45 could be generally square, circular, oval, triangular, etc., without departing from the spirit and scope of the invention.

5                   Manufacture of first flexible elements, second flexible elements or third flexible elements 16, 18, 45, may be from loop-type fabric of natural or artificial materials commercially available from a number of manufacturers, including a nonwoven spun nylon product commercially available as VELTEX®. These fabrics typically require the use of a compatible backing or internal layer of padding, and  
10                   commercially available constructions are typically a loop-type fabric of nylon laminated to a polymeric foam, such as a polyester foam. The most commonly available material also has an additional knit backing laminated to the underside of the foam, forming a finished underside to the loop-type fabric. In the practice of the present invention, two types of materials have been employed satisfactorily.

15                   The first of these materials is typically employed in a single-ply construction, with a first layer of loop-type nylon fabric, typically of a first color, an inner foam layer, and a second, opposing layer of loop-type nylon fabric, typically of a second color. There is no internal knit-type backing and the construction cannot be pulled apart by pinching and separating the two layers of loop-type fabric, though the  
20                   construction is flexible and can be twisted and turned. While this type of construction may include a finished edge, it is not required.

A second construction, employing loop type material, includes a double-ply construction. The double ply construction employs two separate pieces of foam-backed loop-type nylon fabric with the foam sides facing inward, and either or both may include an internal knit-type backing. The two separate foam backed loop-type fabrics may be sealed together at their lateral edges by any process which provides a secure joining, with a substantially flexible, nominal edging. This may be done satisfactorily by heat sealing with a heated die, ultrasonic bonding, or a very fine stitching machine sewn around the lateral edges. This type of construction, in addition to being flexible and providing an element which can be twisted and turned, can be pinched in the center and separated by pulling in opposite directions up to the point of the joined edges.

This second type of construction also permits the flexible element to be used in an additional manner, and Fig. 8 shows a finger puppet 60 constructed from a first flexible element 62, with a user's finger 64 in phantom. Fig. 9 shows a cross-sectional view of the finger puppet 60 of Fig. 8, taken along line 9-9. This puppet 60 comprises a first flexible element 62 comprising a substantially flat, planar shape in a relaxed state, and being constructed of a first ply 66 and a second ply 72. The first ply 66 has an outer facial surface 68 and an inner facial surface 70, respectively, and the second ply 72 has an outer facial surface 74 and an inner facial surface 76. At least one of these outer facial surfaces, the outer facial surface 68 of the first ply 66 or the outer facial surface 74 of the second ply 72, is constructed of hook or loop fabric. The first ply 66 is defined by a lateral edge 78 and the second ply 72 is defined by lateral edge

80. with lateral edge 78 and lateral edge 80 being joined together by some method as described hereinabove to form a seam 82. In creating the puppet 60, the first flexible element 62 may be folded inwardly at some point along the seam 82 created by the joiner of lateral edge 78 and lateral edge 80 to form an inner pocket 84 capable of  
5 accommodating a finger 64, a hand, an upright hand-held stick, or some other suitable structure.

Alternatively, a first flexible element 62, folded inwardly in this manner, can be employed as free-standing figure, as shown in Fig. 11. In this view, the first flexible element 62, is folded inwardly at some point along the seam 82 created by the  
10 joiner of lateral edge 78 and lateral edge 80 to form an inner pocket 84. The stylized representation of a mouse thus created has sufficient stability to stand alone. It can be used as an independent plaything, or be attached to another figure or a display panel.

Again with reference to Fig. 8, the puppet 60 further comprises a plurality of second elements 86, with each second element 86 comprising a first facial  
15 surface 88 and a second facial surface 90 with at least one facial surface being constructed of hook or loop material capable of releasibly engaging with said hook or loop fabric of the first element 62, and which second elements 86 may be selectively joined to the first element 62 to construct a puppet 60.

If the first flexible element 62 is large enough, the inner pocket 84 can  
20 accommodate a user's hand, rather than a finger. In addition, the first flexible element 62 can be provided with hook or loop material on both the outer facial surface 68 of the first ply 66 and the outer facial surface 74 of the second ply 72, and the hook or loop

material may be of the same type or different types as the hook or loop material described above. Further, the first flexible element may be provided with an internal layer of padding 92.

5           The flexible nature of the flexible elements employed herein permit the maximum use of a child's imagination in designing and creating three-dimensional figures. These figures may be displayed on a display panel, such as the display panel of the present invention, used as finger or hand puppets, as free-standing creations, or apparel. Further, the interchangeability of the elements allow a child to alter an existing figure easily, or disassemble a figure and create an entirely new figure completely in a  
10       short period of time. At the same time the display panel and flexible elements permit use in education, trade show and other display industries.

          From the foregoing description, it can be seen that the present invention comprises an interactive display wall system including a display panel and a modular multi-layer, three dimensional figure which can be readily disassembled and re-  
15       assembled in different forms, and which modular figure may be comprised, in part, of a flexible element which can be used as a finger puppet. It will be appreciated by those skilled in the art that the changes and modifications may be made to the above-described embodiments without departing from the inventive concept thereof. It is understood, therefore, that the present invention is not limited to the particular  
20       embodiments disclosed, but is intended to include all modifications and changes which are within the scope and spirit of the invention as defined by the appended claims.

## CLAIMS

What is claimed is:

1. A display panel, suitable for releasably receiving modular design elements, which design elements are provided with hook or loop fabric, wherein said display panel comprises:

a structural member having a first surface defined by a lateral edge, a second opposite surface defined by a lateral edge, and a side face joining said lateral edges of said first and second surfaces;

a first outer covering comprising a hook or loop fabric, said first outer covering being in facing engagement with said first surface, and having a lateral edge positioned beyond said lateral edge of said first surface of said structural member;

a second outer covering in facing engagement with said second surface, said second outer covering having a lateral edge positioned beyond said lateral edge of said second surface, said lateral edges of said first outer covering and said second outer covering being joined to each other proximate said side face of said structural member in a narrow, unobtrusive seam.

2. The display panel of claim 1 wherein said second outer covering comprises a hook or loop fabric.

3. The display panel of claim 1 further comprising a first padded layer positioned between said first outer covering and said first surface.
4. The display panel of claim 3 further comprising a second padded layer positioned between said second outer covering and said second surface.
5. The display panel of claim 4 wherein said first and second padded layers are comprised of a polymeric foam.
6. The display panel of claim 1 wherein said structural member has a thickness in a range of about 3 millimeters to about 10 millimeters.
7. The display panel of claim 1 wherein said structural member is constructed of corrugated plastic material.
8. The display panel of claim 1 wherein said structural member is constructed of foam board.
9. The display panel of claim 1 wherein said lateral edges of said first and second outer coverings are heat sealed together.

10. The display panel of claim 1 wherein said lateral edges of said first and second outer coverings are joined together by welding with ultrasonic sound or radio frequency energy.

11. A method of making a display panel, suitable for releasably receiving modular design elements, which method comprises the steps of:

positioning a first outer covering comprising a hook or loop fabric in facing engagement with a first surface of a structural member with a lateral edge of said first outer covering being positioned beyond a first lateral edge of said first surface of said structural member;

positioning a second outer covering in facing engagement with a second surface of said structural member with a lateral edge of said second outer covering being positioned beyond a second lateral edge of said second surface of said structural member;

joining said lateral edge of said first outer covering and the lateral edge of said second outer covering to each other proximate a side face joining said first lateral edge and said second lateral edge of said structural member to form a narrow, unobtrusive seam.

12. The method of claim 11 wherein said lateral edges are joined together with a heated platen die.

13. The method of claim 11 wherein said lateral edges are joined together with an ultra sonic bond.

14. A modular multi-layer, three dimensional figure which can be readily disassembled and re-assembled in different forms, said modular figure comprising:

a plurality of first flexible elements, each said first element being in one of a substantially flat, planar shape in a relaxed state and a nonplanar three dimensional shape in an unrelaxed state, the first element having a first and second facial surface, with at least one of said facial surfaces being constructed of a hook or loop fabric;

a plurality of second flexible elements, each said second element being in one of a substantially flat, planar shape in a relaxed state and a nonplanar three dimensional shape in an unrelaxed state, the second element having a first and second facial surface, with each of said surfaces of said second elements being constructed of a hook or loop fabric, wherein at least a portion of said first elements in said relaxed state being releasably attached to a portion of said second elements in said relaxed state, said first elements in said relaxed state being releasably attached to a portion of said second elements in said unrelaxed state, a portion of said first elements in said unrelaxed state



being releasably attached to a portion of said second elements in said relaxed state, a portion of said first elements in said unrelaxed state being releasably attached to said second elements in said unrelaxed state such that said first and second elements releasably attached by said loop and hook fabric and are arranged in a first multilayer pattern to form a first figure, said plurality of first and second elements which form said first figure being separable from each other, at least a portion of said first and second elements which formed said first figure being again releasably attached to each other by said hook or loop fabric in multilayers and in a second pattern either alone or in combination with other of said first and second elements which were not used to form the first figure to form at least a portion of a second figure, whereby a variety of multi-layer, three dimensional figures may be assembled by rearranging said first and second elements in relaxed states, unrelaxed states, and permutations thereof and employing the flexibility of said first and second elements to create singular or multiple, multi-layer, three dimensional figures.

15. The modular figure of claim **14** wherein at least a portion of said first elements are provided with hook or loop fabric on both facial surfaces.

16. The modular figure of claim 14 wherein at least a portion of said first elements are further provided with an internal layer of padding between said first and second facial surfaces.

17. The modular figure of claim 14 wherein at least a portion of said first elements are provided with loop fabric on both facial surfaces.

18. The modular figure of claim 17 wherein at least a portion of said first elements are provided with two ply loop fabric.

19. The modular figure of claim 17 wherein at least a portion of said second elements are provided with hook fabric on both facial surfaces.

20. The modular figure of claim 19 further comprising at least one third flexible element, said third element comprising a substantially flat, planar shape in a relaxed state and having a first and second facial surface, said first facial surface being constructed of a hook fabric and said second facial surface being constructed of a loop fabric.

21. The modular figure of claim 17 wherein at least a portion of said second elements are provided with hook fabric on both facial surfaces.

22. The modular figure of claim 14 wherein at least a portion of said first elements are provided with loop fabric on said first facial surface and hook fabric on said second facial surface.

23. The modular figure of claim 14 wherein at least a portion of said second elements are provided with loop fabric on said first facial surface and hook fabric on said second facial surface.

24. A finger or hand puppet comprising:  
a first flexible element comprising a substantially flat, planar shape in a relaxed state, and being constructed of first and second plies each having an outer facial surface and an inner facial surface, respectively, with at least one said outer facial surface being constructed of hook or loop fabric, each said first and second plies having a lateral edge with said lateral edges being joined together along their entire length, and wherein said first element may be folded inwardly at some point along said joined lateral edge to form an inner pocket capable of accommodating a finger or hand;

a plurality of second elements, each said second element comprising a first and second facial surface with a first facial surface being constructed of hook or loop material releasibly engageable with said hook or

loop fabric of said first element, and which second elements may be selectively joined to said first element to construct a puppet.

25. The puppet of claim **24** wherein said first element is provided with hook or loop fabric on both facial surfaces.

26. The puppet of claim **24** wherein said first and second plies further include an internal layer of padding.

27. The puppet of claim **25** wherein said first element is provided with loop fabric on both facial surfaces.

28. The puppet of claim **24** wherein at least a portion of said second elements are provided with hook fabric on both facial surfaces.

29. The puppet of claim **25** wherein said first element is provided with loop fabric on said first facial surface and hook fabric on said second facial surface.

30. The modular figure of claim 24 wherein at least a portion of said second elements are provided with loop fabric on said first facial surface and hook fabric on said second facial surface.

31. A display system comprising in combination:

- a display panel, comprising:
  - a structural member having a first surface defined by a lateral edge, a second opposite surface defined by a lateral edge, and a side face joining said lateral edges of said first and second surfaces:
  - a first outer covering comprising a hook or loop fabric, said first outer covering being in facing engagement with said first surface; and,
  - a second outer covering in facing engagement with said second surface; and
- a modular multi-layer, three dimensional figure which can be readily disassembled and re-assembled in different forms, said modular figure comprising:
  - a plurality of first flexible elements, each said first element being in one of a substantially flat, planar shape in a relaxed state and a nonplanar three dimensional shape in an unrelaxed state, the first element having a first and second facial surface, with at least one of said facial surfaces being constructed of a hook or loop fabric;

a plurality of second flexible elements, each said second element being in one of a substantially flat, planar shape in a relaxed state and a nonplanar three dimensional shape in an unrelaxed state, the second element having a first and second facial surface, with each of said surfaces of said second elements being constructed of a hook or loop fabric, wherein at least a portion of said first elements in said relaxed state being releasably attached to a portion of said second elements in said relaxed state, said first elements in said relaxed state being releasably attached to a portion of said second elements in said unrelaxed state, a portion of said first elements in said unrelaxed state being releasably attached to a portion of said second elements in said relaxed state, a portion of said first elements in said unrelaxed state being releasably attached to said second elements in said unrelaxed state such that said first and second elements releasably attached by said hook and loop fabric and are arranged in a first multilayer pattern to form a first figure, said plurality of first and second elements which form said first figure being separable from each other, at least a portion of said first and second elements which formed said first figure being again releasably attached to each other by said hook or loop fabric in multilayers and in a second pattern either alone or in combination with other of said first and second elements which were not used to form the first figure to form at least a portion of a second figure, whereby a wide variety of multi-layer, three dimensional figures may be assembled by rearranging said first and

second elements in relaxed states, unrelaxed states, and permutations thereof and employing the flexibility of said first and second elements to create multi-layer, three dimensional figures, said first and second figures being releasibly attachable to one of said first and second outer coverings.

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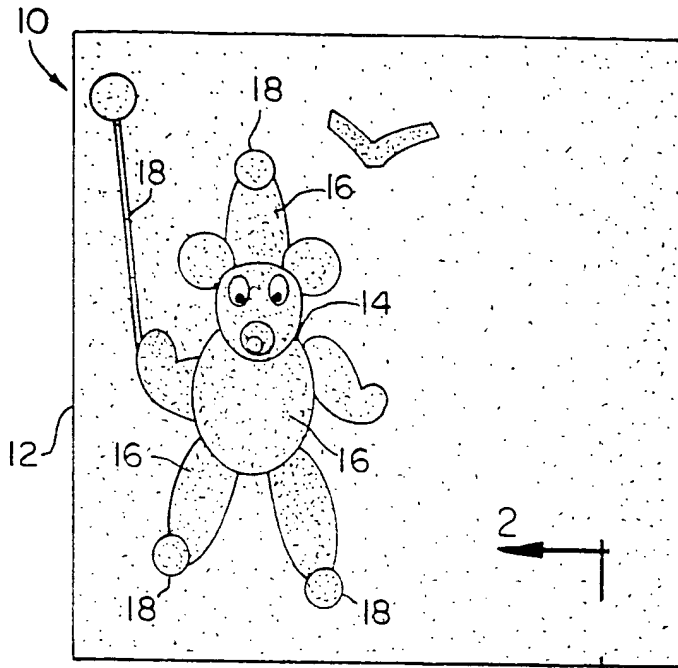


FIG. 1

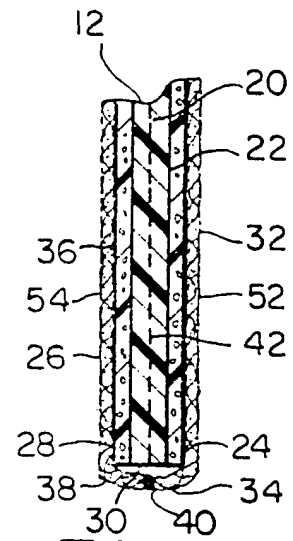


FIG. 2

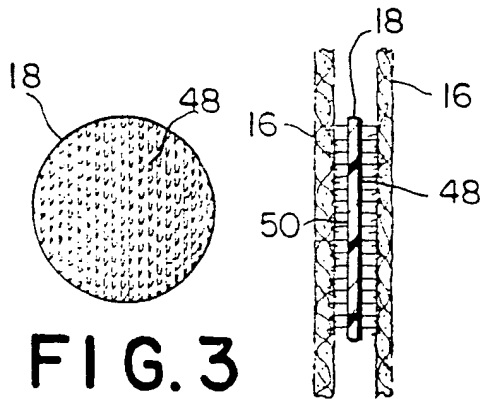


FIG. 3

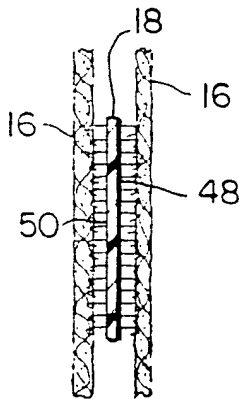


FIG. 4

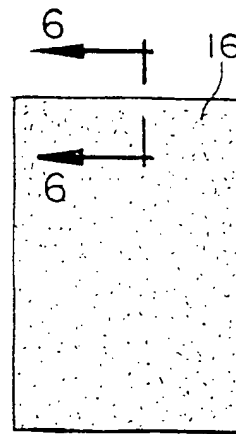


FIG. 5

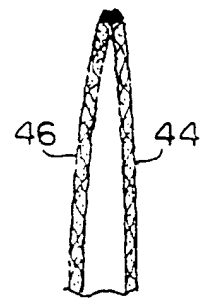


FIG. 6



FIG. 7



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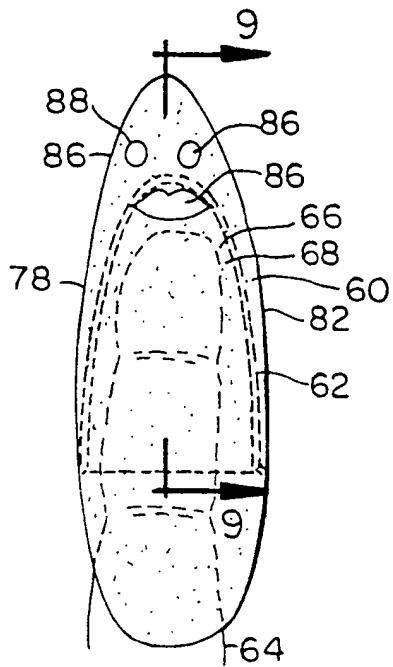


FIG. 8

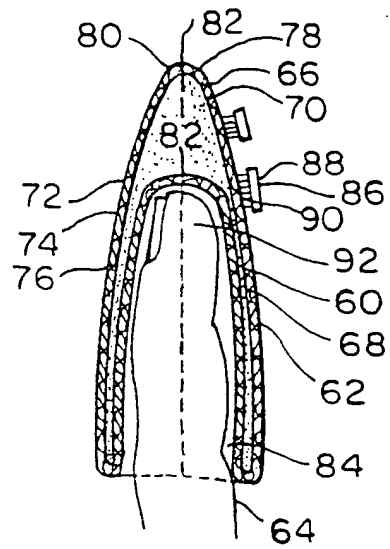


FIG. 9

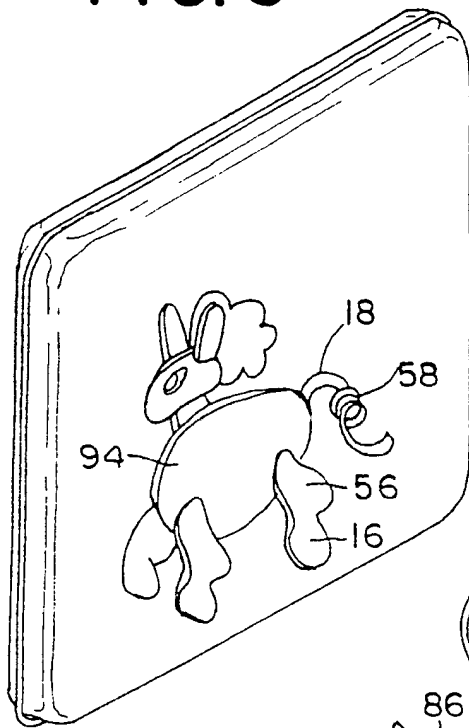


FIG. 10

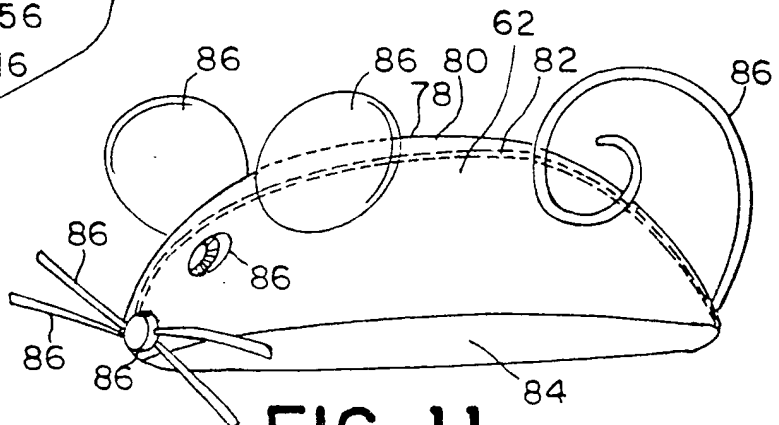


FIG. 11

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/18961

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : A63H 3/02, 3/10, 3/16; G09B 29/00; G09F 7/12

US CL : 446/118, 85; 40/584; 434/365

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 446/85, 97, 98, 108, 118, 268, 321, 329, 369, 385, 387; 40/584; 434/365, 408, 430

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 4,635,418 A (Hobgood) 13 January 1987, reference numerals 20, 22-25, see Det Desc (8)	1, 2, 8 ----- 3-5, 7, 9, 10, 12-13, 31
Y --- A	US 5,384,999 A (Roche et. al.) 31 January 1995, Fig. 4	3-5, 31 ----- 1-2, 6-13
Y --- A	US 5,775,919 A (Gardner) 07 July 1998, reference numerals 22, 24, 26 and 28	7, 9, 10, 12-13 ----- 1-6, 8, 11

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* "A"	Special categories of cited documents document defining the general state of the art which is not considered to be of particular relevance	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*B* "C"	earlier document published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*X* document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*D* "E"	document referring to an oral disclosure, use, exhibition or other means	*Y* document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*F* "G"	document published prior to the international filing date but later than the priority date claimed	*Z* document member of the same patent family

Date of the actual completion of the international search

05 NOVEMBER 1998

Date of mailing of the international search report

19 NOV 1998

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**Paralegal Specialist**  
**Technology Center 3700**

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## INTERNATIONAL SEARCH REPORT

 International application No.  
 PCT/US98/18961

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,960,383 A (Smith et. al.) 02 October 1990, Fig. 1	1-13
X	US 4,937,181 A (Rogers) 26 June 1990, Figs. 2 and 4	1-13, 14, 16, 22
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Y		15, 17-18, 20-21, 23, 31
A	FR 2,559,676 A (Ballay) 23 August 1985, Figs. 1, 3, 4	17-23
X	Pockets of Learning toy advertisement 16 February 1996, pg 13, #3488	14
A	GB 1,496,789 A (Gibson) 05 January 1978, Fig. 4	14-23
Y	US 4,403,000 A (Gates) 06 September 1983, Figs. 1-3	17, 20, 31
X	US 3,316,669 A (Nachbar) 08 September 1964, Figs. 3-4, 6	15-23
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A		14
X	US 4,671,514 A (Wilson-Diehl) 09 June 1987, Figs. 3, 4 and abstract	14-18
---		----
Y		19-21, 23, 29-31
X	US 4,122,628 A (Crowell et. al.) 31 October 1978, Figs. 1 and 2	14
X	US 4,504,240 (Thomas) 12 March 1985, Figs. 5 and 6	24-27
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Y		29-30
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A		14-23

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,979,924 A (Manger) 25 December 1990, Figs. 1 and 2	14-23
A	US 5,224,895 A (Franz) 06 July 1993, Figs. 1 and 3	14-23
X	Monster Puppets advertisement (admitted prior art) all	24
X	Holbrook Room Dividers advertisement, pg 35	1-2
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A		3-13
X	US Re19,238 A (Burke) 24 September 1931, Figs. 1 and 2	1-2, 14-23
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A		3-13, 31

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